

**Mini-symposium at the PANACM 2015
(1st Pan-American Congress in Computational Mechanics)**

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<http://congress.cimne.com/PANACM2015/frontal/default.asp>

Title: *Computational methods for kinetic collisional transport*

Session organizers: *Irene M. Gamba, UT Austin, USA,*

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Abstract:

The Boltzmann equation, which describes gas flow at microscopic statistical level, is central to the theory of aerothermodynamics of non-equilibrium. It model flows in rarefied regimes and it is fundamental for predicting mesoscopic phenomena in gases when experimental data is limited or not available, in regimes ranging from external aerodynamics, chemical reactions and near vacuum flows to interacting charged transport modeling plasma or submicroscale devices.

We seek the development of accurate computational capabilities for the solution of the Boltzmann type equations or systems for simulations of non equilibrium flows that range from hard sphere potentials to Coulombic limits and Landau Fokker Plank flow for collisional plasma. Important issues include the fast evaluation of collision integrals; simulations that account for real gas effects and chemical and electromagnetic interaction of particles; complex geometry simulations; coupling of continuum and non-continuum models; and quantification of numerical error and uncertainty of simulations.

List of Tentative speakers

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